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Atlantic Richfield Company

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4 Centerpointe Drive, 4-435
La Palma, CA 90623
Direct: (714) 228-6770

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Mr. Steven Way
On-Scene Coordinator
Emergency Response Program (8EPR-SA)
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Delivered via e-mail

Subject: July 2013 Monthly Progress Report
Rico-Argentine Mine Site – Rico Tunnels
Operable Unit OU01, Rico, Colorado

Dear Mr. Way,

This progress report describes activities conducted during the month of July, 2013 at the Rico-Argentine Mine Site (site) and activities anticipated to occur during the upcoming month. These activities are organized by task as identified in the Removal Action Work Plan. This progress report is being submitted in accordance with Paragraph 35.a of the Unilateral Administrative Order for Removal Action (the "UAO"), dated March 17, 2011.

ACTIVITIES FOR JULY

This section describes significant developments during the preceding period including actions performed and any problems encountered during this reporting period.

Site-Wide Activities

- Digital archives continue to be reviewed by the Atlantic Richfield (AR) project team for information that may provide a better understanding of the site. Search strategies continue to be refined to maximize to the extent feasible the recovery of information of potential use to the project team. A database of the searches performed is in development to document the use of the digital archive.

Task A – Pre-Design and Ongoing Site Monitoring

- Submitted and posted the March and April Surface Water Sampling Report and cross sectional transect data to the project SharePoint site. https://www.aecomonline.net/projects/Rico
- Preparing and reviewing May, June, and July Surface Water Sampling Reports and cross sectional transect data prior to submittal to EPA and posting to the project SharePoint site.
- The July water sampling event was initiated on July 9, 2013 and completed July 19, 2013.
- July sampling event groundwater samples and water levels were obtained from the following groundwater wells: GW-1, GW-3, GW-4, GW-5, GW-6, EB-1, EB-2, MW-101, MW-102, MW-103, MW-104, MW-204, CHV-101, P13-102, P13-103, MW-1 DEEP, MW-1 SHALLOW, MW-2 DEEP, MW-3 DEEP, MW-4 DEEP, MW-4 SHALLOW, MW-5 DEEP, MW-5 SHALLOW, MW-6 DEEP, and MW-6 SHALLOW. The following wells were found to be dry: MW-202, MW-2 SHALLOW, MW-3 SHALLLOW, and BAH-01.
- During the July sampling event, surface water samples were collected from locations DR-3, DR-4, DR-5 and DR-6.

- During the July sampling event, Dolores River water samples and flow measurements were collected from DR-2 and DR-7. Grab samples as well as multi-point composite samples were obtained from the two referenced river locations.
- During July, flumes were inspected for debris. The flumes were cleared as required.
- Downloaded available flume data for July 2013 from the Parshall flume data loggers. The most recent data was obtained from the OTT PLS pressure transducer and ultra-sonic level sensor at north flume (DR-3) and from OTT Orpheus Mini at south flume (DR-6).
- Data from the pressure transducer located in angle borehole AT-2 was collected.
- Conducted inspection of the pond system spillways, pipes, water levels and general conditions. Overall condition of the pond system was good. All spillways and pipes were observed to be flowing without obstruction.
- Downloaded available data for July 2013 from the Doppler Radar Flow Meter installed at Dolores River station DR-1. The doppler flow meter was removed from the Dolores River (DR-1) and a new temporary unit was placed at DR-2.
- Continued work on overall site Data Management System (EQuIS) development. A web-based system with site data which can be queried in a tabular format has been set up and is currently being tested and refined. A web-based system with site data which can be queried from a map is complete and being tested internally.
- Additional evaluation of potential improvements on field water data gathering and telemetry. Continued work on the antenna permit with the Town of Rico.
- Continued development of the Site Conceptual Model (SCM).

Task B – Management of Precipitation Solids in the Upper Settling Ponds

- St. Louis adit discharge water continued to be diverted to Pond 15 during July 2013. Pond 18 has not been in use during July due to seeps and leakage from a partially buried historic plastic pipe between Pond 18 and 15 observed in November. Repairs of the Pond 18 pipe seep area are scheduled for August 2013.
- The St. Louis Pond system embankments flow and general conditions were inspected during July 2013. The ponds had adequate freeboard through the month. Flow into and between the ponds is not blocked, and the overall condition of the embankments appears good.
- Mobilized contractor (Flare Construction) to complete the upper pond solids removal for 2013. Materials and equipment were mobilized from mid-July to the end of July.

Task C – Design and Construction of a Solids Repository

- Continued design of a phased solids repository at the South Stacked Repository – Option A (SSR-A) site.
- Continued work on geotechnical analyses of alternative solids drying facility and repository sites, focusing current attention on Pond 13 and the SSR-A.
- Continued evaluation of geotechnical field and laboratory test data on Pond 18 solids placed in the Interim Drying Facility (IDF) in 2011.
- Worked on establishing parameters for shear strength and consolidation testing of surrogate lime-amended treatment solids.
- Continued work to secure lands needed for a permanent solids repository. The footprint of the SSR-A will easily fit within the area of the US Forest Service tract known as STA-2. This tract is approximately 8 acres in size and qualifies as a mineral fraction under the Small Tracts Act for private acquisition. AR and it contractors are continuing preparation of the application for acquisition of this parcel through the Small Tracts Act.

Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit

- Based on a site meeting on July 24 and 25 with EPA, AR and AECOM, six options are now being considered and evaluated to access a suitable location in the Hermosa Formation portion of the St. Louis Tunnel for hydraulic control. These include 1) a base case with continued drainage

through the debris plug, plus monitoring wells to evaluate hydraulic head in the tunnel; 2) similar to the base case but with sub-horizontal relief wells to control hydraulic head behind the debris plug; 3) sub-horizontal well drains plus plugging of the debris plug; 4) construction of an interception wall immediately downstream of the debris plug to intercept mine water lost into the colluvium; 5) traditional tunneling; and 6) open-cut method with retaining walls to fully expose the intact rock portion of the tunnel.

- Evaluation of these options includes, as necessary, contacts with directional drilling contractors to further identify and characterize potential issues with these technologies to penetrate the colluvium and colluvial debris blanketing the Hermosa Formation and blocking the St. Louis Tunnel at the end of the adit collapse area.

Task E – Source Water Investigations and Controls

- Continued preparation of a treatability study report to document implementation of the 2012 517 Shaft Injection Test and interpretation of results.
- Continued the 2013 517 Shaft Injection Test until July 9, 2013.
    - A twenty-five percent (%) sodium hydroxide (NaOH) solution was injected below the water surface in the 517 Shaft at a rate of approximately 600 milliliter per minute (0.16 gallon per minute [gpm]).
    - Water from Silver Creek was pumped to the 517 Shaft collar via a stand-alone water carrier line at a rate of approximately 25 gpm.
    - Continuously logged water quality data was periodically downloaded from multi-parameter sondes deployed in the 517 Shaft and along the St. Louis Tunnel discharge channel at the DR-3A sampling and monitoring location.
    - Treatment performance sampling and monitoring continued to be performed at DR-3A in general accordance with the 517 Shaft Injection Test Work Plan Addendum.
    - The U.S. EPA's contractor (Weston) provided in-tunnel support on July 9, 10, 20 and 24 2013.
        - In-tunnel support reported a minor seep from the air/vacuum valve (AVV) on July 9, 2013. The injection system was shutdown and the injection hose was flushed with fresh water. The released NaOH solution was diluted with fresh water and washed down the 517 Shaft.
        - Water samples were collected from the 517 Shaft on July 9 and 20, 2013.
        - The injection hose suspended down the 517 Shaft and the AVV were removed from service and the injection hose was plumbed into the Silver Creek carrier line on July 10, 2013 to enhance mixing of the injection solution. The injection system was not restarted.
        - Due to concerns associated with allowing the NaOH solution to contact the shaft timbers, the injection hose was re-deployed down the 517 Shaft and the AVV, with a new gasket seat, were put back in-line on July 20, 2013. The system was wet tested and a leak was observed at the AVV; the injection system was not restarted.
        - U.S. EPA and Weston personnel inspected the in-tunnel 517 Shaft Injection System components and began neutralizing the released NaOH solution using a base neutralizing solution on July 24, 2013.
        - The 517 Shaft Injection Test will not be restarted this year and plans for demobilization are in progress.
- Continued Blaine Tunnel water depth and flow monitoring behind the Blaine Coffer Dam and Blaine Flume.
    - Data was downloaded on July 10, 2013.
    - Two water samples were collected from the Blaine Tunnel on July 9, 2013.
    - Conducted Blaine Tunnel reconnaissance with in-tunnel support from the U.S. EPA's contractor (Weston) on July 10, 2013. Water was observed to be flowing through the flume at a depth of approximately 0.5 inch, corresponding to a flow rate of approximately 0.2 gallon per minute.

Task F – Water Treatment System Analysis and Design

- Continued constructed wetland pilot-scale testing.
  - Inspections were performed on July 10 and 26, 2013.
  - Influent and effluent flow rates were measured to be approximately 2.6 gpm and 2.0 gpm, respectively, on July 26, 2013.
  - Sampling and monitoring were performed in general accordance with the Sampling and Analysis Plan (SAP). Water samples were collected from the inlet flow control box, rock drain monitoring port, and wetland outlet and submitted for laboratory analysis on July 10, 2013.
- Continued preparation of a report documenting winter 2012-2013 constructed wetland pilot-scale testing activities, observations, and analytical results.
- Continued wetland demonstration treatability study activities.
  - Continued flocculant/organic coagulant, and Gunderboom® permeable curtain bench-scale testing to evaluate particulate removal in the settling basin of the constructed wetland demonstration.
  - Continued preparing the *St. Louis Tunnel Discharge Constructed Wetland Demonstration Treatability Study Work Plan* (Constructed Wetland Demonstration Work Plan).
- Continued evaluation of ion exchange bench-scale testing.
- Continued updating an existing model to predict discharge flows from the St. Louis Tunnel.
- Mobilization of the Wetland Field Demonstration contractor (WRS Compass) was initiated during mid-July. Equipment, personnel and materials procurement has been completed through July month end.

ACTIVITIES FOR UPCOMING MONTH

This section describes developments expected to occur during the upcoming reporting period, including a schedule of work to be performed, anticipated problems and planned resolution of past or anticipated problems.

Site-Wide Activities

- Complete, review and post the May and June 2013 Surface Water Sampling Reports and cross sectional transect data to the project SharePoint site in August 2013. https://www.aecomonline.net/projects/Rico
- Begin review of the July 2013 Surface Water Sampling Report and cross sectional transect data.
- Continue reviewing the digitally archived historic documents and maps.
- Review and finalize the draft avalanche hazard study report for the St. Louis Ponds Site and the Argentine Mill Site/Access Road.

Task A – Pre-Design and Ongoing Site Monitoring

- Conduct surface water and groundwater sampling/analyses and flow measurements per protocols contained in the SAP.
- Post surface water quality data to the SharePoint site after QA/QC review; and submit EQuIS data downloads to URS/EPA pending completion of EQuIS database.
- Download data from the Parshall flume data collectors and post to the project SharePoint site.
- Inspect doppler radar monitoring equipment performance at DR-2.
- Continue testing on the site Data Management System in preparation for system rollout.
- Complete monthly inspection of St. Louis Pond system. Perform detailed inspection of Pond 18 embankments and condition.
- Continue development of the SCM.

Task B – Management of Precipitation Solids in the Upper Settling Ponds

- Initiate construction work for the solids removal during August.
- Lift Pond 13 causeway to facilitate liquid-solids separation of pond 11 and 12 slurry and provide access for geotechnical investigations.
- Repairs to be completed at Pond 18
- Continue evaluation of calcine tailings/Pond 18 solids SPLP and associated geochemical testing.

Task C – Design and Construction of a Solids Repository

- Continue design of a phased solids repository at the SSR-A site.
- Continue geotechnical analyses and review to support design of a permanent drying facility and repository, including ongoing laboratory testing.
- Continue efforts to secure access to lands needed for a permanent drying facility and solids repository.
- Initiate permit preparation for the solids repository.

Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit

- Monitor/download data from the transducer at drill hole AT-2.
- Continue with feasibility evaluation of options to access a suitable location in the Hermosa Formation portion of the St. Louis Tunnel for a hydraulic control.
- Continue evaluation of potential for in-mine storage of St. Louis Tunnel flows behind the planned bulkhead.

Task E – Source Water Investigations and Controls

- Decontaminate and demobilize the 2013 517 Shaft Injection Test system.
- Perform post-injection water quality monitoring at the 517 Shaft.
- Perform post-injection water sampling and monitoring at DR-3A.
- Complete the treatability study report documenting implementation of the 2012 517 Shaft Injection Test and interpretation of results.
- Continue Blaine Tunnel water depth and flow monitoring behind the Blaine Coffer Dam and Blaine Flume.
- Continue work on compiling relevant historic mine workings and data from ongoing EPA studies into AutoCAD 3D model of the mine workings reporting to the St. Louis Tunnel.

Task F – Water Treatment System Analysis and Design

- Continue constructed wetland pilot-scale testing.
  - Continue flow through the pilot-scale wetland to evaluate seasonal and longer-term changes to the system with reduced sampling and monitoring.
  - Complete the report documenting the winter 2012-2013 pilot scale testing activities.
- Continue wetland demonstration treatability study activities.
  - Complete the Constructed Wetland Demonstration Work Plan.
  - Start construction of the wetland demonstration.
  - Continue flocculant/organic coagulant, and Gunderboom® permeable curtain bench-scale testing to evaluate particulate removal.
- Continue evaluation of ion exchange treatment technology by performing bench-scale ion exchange isotherm and column testing.
- Continue work on updating an existing model to predict discharges from the St. Louis Tunnel.
- Continue scoping additional data needs as necessary related to treatment system alternatives.
- Initiate construction of the Field Demonstration Wetland.

If you have any questions, please feel free to contact me at (951) 265-4277.

Sincerely,

Anthony R. Brown
Project Manager
Atlantic Richfield Company

cc: R. Halsey, Atlantic Richfield
T. Moore, Atlantic Richfield
C. Sanchez, Anderson Engineering
D. McCarthy, Copper Environmental Consulting
T. Kreutz, AECOM
D.Yadon, AECOM
J. Decker, AECOM
J. Christner, Weston Solutions, Inc.
S. Riese, EnSci
A. Cohen, Esq., Davis Graham & Stubbs
W. Duffy, Esq., Davis Graham & Stubbs
S. D'Cruz, Esq., Atlantic Richfield
A. Piggott, Esq., U.S. EPA
M. Lombardi, AMEC
S. Archer, AMEC

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